

## ABSTRACT

An analytical apparatus, such as a quartz crystal microbalance, comprising a piezoelectric sensor and an oscillator circuit, coupled to the sensor, to oscillate at a frequency substantially determined by a resonant frequency of the sensor, and to provide an output signal at the oscillator frequency at an output, the oscillator circuit incorporates means to maintain a substantially constant drive signal to the piezoelectric sensor. Preferably the substantially constant drive signal is maintained by AGC means (33) within a feedback loop of the oscillator. Advantageously the gain control signal is used as an indication of the Q of the piezoelectric sensor. It is desirable that the drive signal to the sensor is substantially sinusoidal since this provides greater accuracy, sensitivity and stability for the apparatus. This can be achieved by ensuring that all the elements in the feedback loop providing signal gain and attenuation are configured to operate in a substantially linear mode.